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	Title	
	2010 SPRING NORTHERN BOBWHITE WHISTLE COUNT	

**ABSTRACT:** Spring whistle counts have been conducted annually throughout Indiana since 1947 (except 1959-1975) to assess changes in bobwhite abundance. The number of whistling quail was counted at 15 stops along 82 routes in 2010. Data were only included in the analysis if routes were surveyed in both 2009 and 2010, and at least 1 quail was recorded in those years. Considering only these routes ( $n = 73$ ), the statewide mean number of bobwhites heard per survey stop in 2010 ( $\bar{x} = 0.69 \pm 0.08$ ) was not significantly different ( $P = 0.56$ ) from the number heard in 2008 ( $\bar{x} = 0.66 \pm 0.07$ ). When management regions were examined, indices did not differ between years ( $P > 0.16$ ). When we examined Bird Conservation Regions (BCR) in Indiana, we again found no significant differences in number of bobwhites heard per stop.

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The northern bobwhite is widely distributed throughout eastern North America and Mexico and is one of the most important game birds in the southern and mid-western United States. In Indiana, there are approximately 14,000 quail hunters that annually harvest over 20,000 birds. To monitor changes in the bird's annual abundance, the Indiana Division of Fish and Wildlife conducts roadside counts of whistling bobwhites each spring. Survey results are used to formulate management priorities, set harvest regulations, and evaluate habitat improvement programs.

## METHODS

The Indiana Division of Fish and Wildlife conducts road-side counts of whistling bobwhites each spring to monitor changes in population abundance. These counts have been conducted annually since 1947 lapsing in the years between 1958 and 1976 due to personnel issues. Currently, 91 routes are established across 88 counties and are surveyed during the month of June. Observers record the number of quail heard whistling during 3 minute periods

at 15 different stops along each route. The routes are 15 miles in length and listening stops are spaced at approximately 1-mile intervals along each route. Counts start at sunrise and are not conducted during precipitation events or when winds exceeded 12 mph. Only data from routes surveyed in both years where at least 1 quail was recorded were used to assess annual changes in the bobwhite breeding population. A paired t-test was used to compare indices of abundance between 2009 and 2010 within each of Indiana's 4 bobwhite management regions (Figure 3) and 3 BCR regions (Figure 4).

## RESULTS

In 2010, a total of 82 established routes were surveyed in 80 counties between 4 June and 1 July. During 2009 and 2010, only 73 routes in 71 counties were conducted in both years and recorded at least 1 quail, and data from only these routes were used to draw statistical comparisons between indices of bobwhite abundance. Statewide, the number of bobwhites heard per stop in 2010 ( $\bar{x} = 0.69 \pm$



0.08) did not differ significantly ( $P = 0.56$ ) from the number heard per stop in 2009 ( $\bar{x} = 0.66 \pm 0.07$ ; Table 1). Regionally, the number of bobwhites heard per stop in 2010 did not differ ( $P > 0.16$ ) from the number heard in 2009 within any of the four physiographic regions of the state (Table 1). In 2010, bobwhite trends were also examined by Bird Conservation Regions (BCR) in Indiana (Figure 3). BCR 23 (Prairie Hardwood Transition) was unchanged between 2009 and 2010. We did see a 22.9% decline in the number of bobwhites heard per stop in 2010 in BCR 22 (Eastern Tallgrass Prairie) and a 22.6% increase in BCR 24 (Central Hardwood), but neither region differed significantly ( $P > 0.08$ ) from the number heard in 2009 (Table 2).

## DISCUSSION

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After a significant decline in 2009, attributed to extreme flooding in June of 2008 and severe winter weather in January 2009, the 2010 survey year saw 18.3% and 22.6% rebounds in the Southeast-west region and the Central Hardwood Bird Conservation Region (BCR 24), respectively. Persistent ice and snow has shown to have a detrimental effect on bobwhite populations, but as in the past, bobwhite numbers in southern Indiana rebound remarkably well if suitable habitat is available.

Statewide, long-term trend data continues to show that the northern bobwhite population remains well below numbers observed in past decades in Indiana's 4 physiographic-quail survey management regions (Figure 1) and 3 bird conservation regions (Figure 2). The severe winter weather of the late 1970s took a horrific toll on Indiana's bobwhite population. However, if suitable habitat had been available following these weather events, the population would certainly have recovered. Changes in federal farm programs, along with changes in farming practices, were the primary reasons that the population did not recover fully after those severe winters. In fact, Indiana's bobwhite population had already begun to

decline prior to the winter storms of 1978 and 1979 due to these same reasons (Figure 2). In the late 1960s and early 1970s there was upwards of 4 million acres of farmland enrolled in USDA land retirement programs. The number of idled acres in Indiana began to decline in the mid-1970s due to changes in USDA programs. The severe winter weather in the late 1970s only accelerated the bobwhite's decline and the continued loss of habitat following those winters is the primary reason the population has not been able to recover. Currently, little more than 295,500 acres of farmland are idle across the state through the Conservation Reserve Program (CRP). This equates to more than a 90% loss of potential game bird habitat when compared to the late 1960s and early 1970s.

However, Indiana landowners can help create suitable habitat for bobwhites by taking advantage of some current federal programs including the Continuous Conservation Reserve Program (CCRP) administered by the USDA Farm Service Agency. There are 3 CCRP practices in particular that are available to Indiana landowners and can create a noticeable benefit for Indiana's upland game: 1) CP-21 – filter strips, 2) CP-33 – upland wildlife buffers, and 3) CP38 – State Acres for Wildlife Enhancement (SAFE). These conservation practices provide essential nesting cover for quail and other game birds while lessening erosion and improving water quality. For more information about these and other federal programs, contact your local USDA service center. The Indiana Division of Fish and Wildlife also has programs that can provide landowners with support and funds to establish and/or maintain game bird habitat. These programs include the Wildlife Habitat Cost-Share Program, the Game Bird Habitat Development Program, and the Quail Habitat Incentives Program. For information about these programs, contact your local district biologist or visit:

<http://www.in.gov/dnr/fishwild>

Table 1. Number of northern bobwhites heard per stop ( $\bar{x} \pm \text{SD}$ ) along 73 paired survey routes within Indiana's 4 bobwhite management regions, 2009-2010.

Mgmt Region	<i>n</i> <sup>a</sup>	2009	2010	% Change	<i>P</i>
Statewide	73	0.66 ± 0.07	0.69 ± 0.08	5.6%	0.56
North	8	0.75 ± 0.23	0.65 ± 0.25	-13.2%	0.25
Central	27	0.41 ± 0.09	0.35 ± 0.05	-15.2%	0.45
South-central	14	0.68 ± 0.14	0.80 ± 0.21	17.3%	0.16
Southeast-west	19	0.94 ± 0.12	1.11 ± 0.18	18.3%	0.30

<sup>a</sup> Includes only non-zero routes surveyed in both 2009 and 2010.

Table 2. Number of northern bobwhites heard per stop ( $\bar{x} \pm \text{SD}$ ) along 73 paired survey routes within Indiana's 3 bird conservation regions, 2009-2010.

BCR Region	<i>n</i> <sup>a</sup>	2009	2010	% Change	<i>P</i>
Statewide	73	0.66 ± 0.07	0.69 ± 0.08	5.6%	0.56
BCR 22	35	0.47 ± 0.09	0.37 ± 0.07	-22.9%	0.13
BCR 23	4	0.68 ± 0.28	0.68 ± 0.25	0.0%	1.00
BCR 24	34	0.84 ± 0.10	1.03 ± 0.14	22.6%	0.08

<sup>a</sup> Includes only non-zero routes surveyed in both 2009 and 2010.



Figure 1. Mean number of northern bobwhite heard at each survey stop within Indiana's four bobwhite management regions, 1947-2010. No surveys were conducted from 1959-1975.

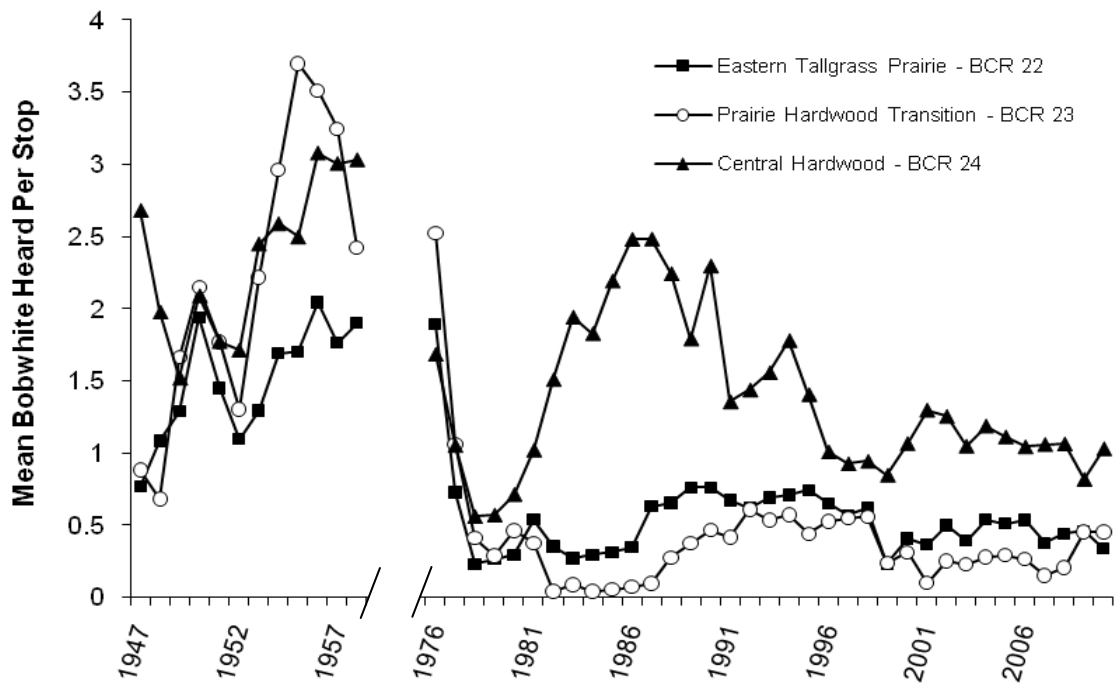


Figure 2. Mean number of northern bobwhite heard at each survey stop within Indiana's three bird conservation regions (BCR), 1947-2010. No surveys were conducted from 1959-1975.

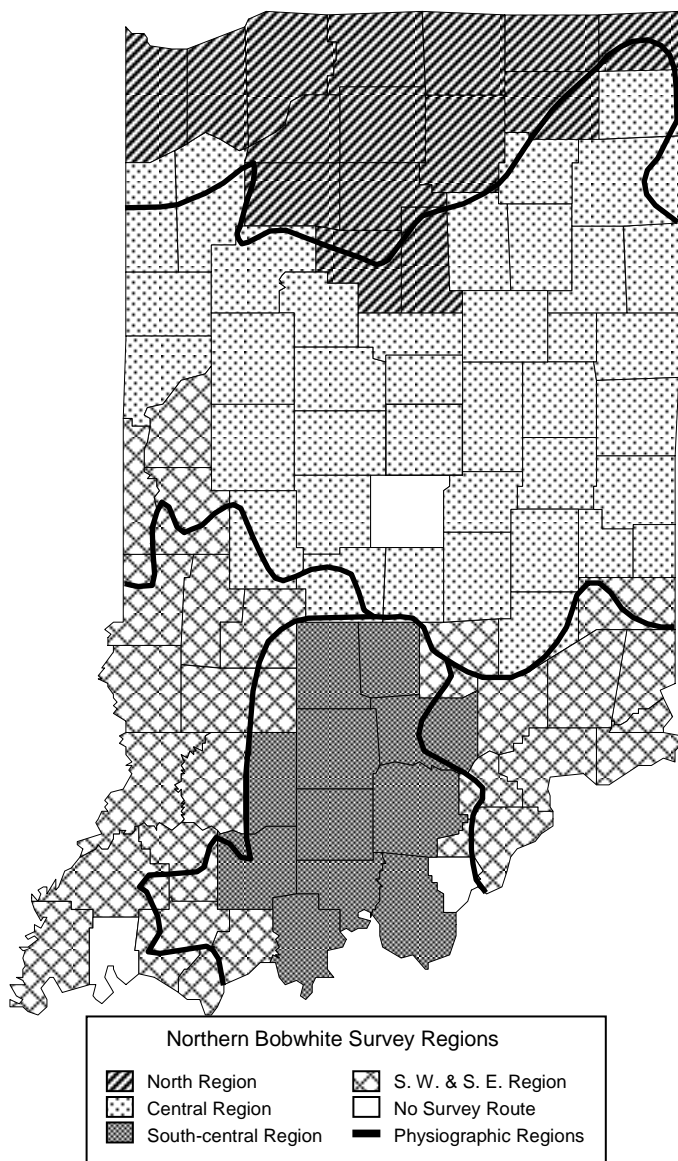


Figure 3. Map illustrating the counties included in each of Indiana's 4 northern bobwhite survey regions. The survey regions approximately correspond to the physiographic regions of Indiana described by the U.S. Fish and Wildlife Service.

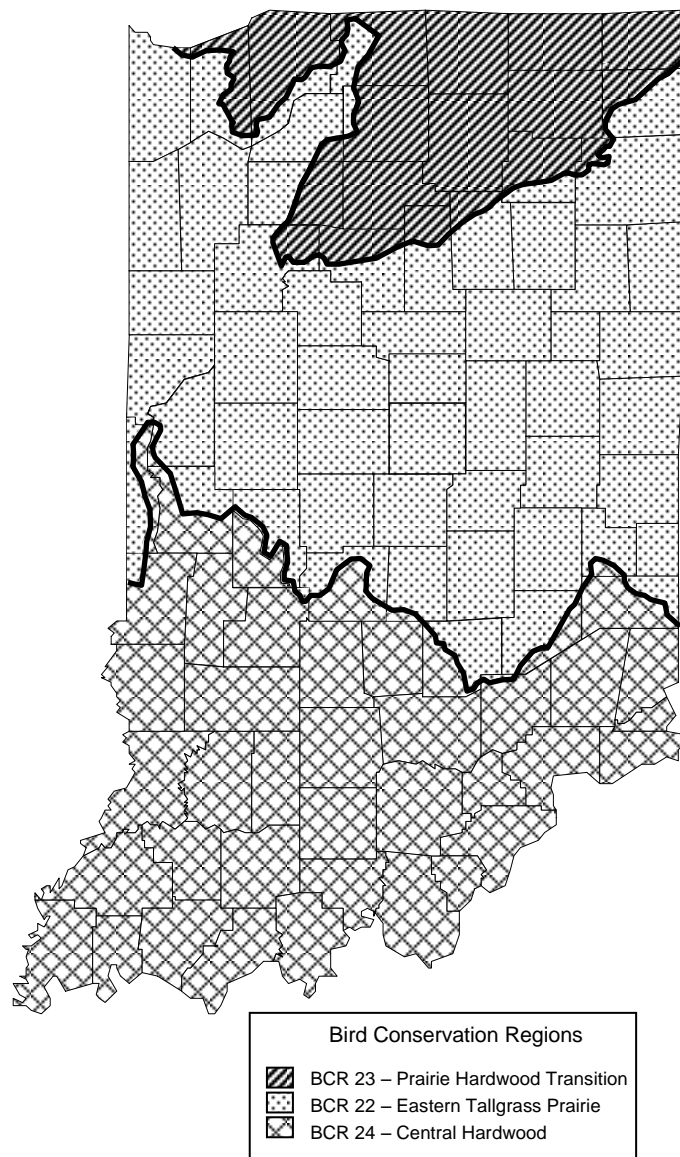


Figure 4. Map illustrating the 3 bird conservation regions (BCR) within the state of Indiana. BCR are ecologically defined units that provide a consistent spatial framework for bird conservation across North American landscapes under the North American Bird Conservation Initiative (Rich et al. 2004).